



PC- and EtherCAT-based control improve the performance and flexibility of packaging machines

# Bosch Packaging: Traditionally innovative



For over 70 years, Bosch Packaging Technology Inc., based in New Richmond, Wisconsin, has employed state-of-the-art technology in its products. Since 2004, the company has used the PC- and EtherCAT-based Beckhoff control platform on most of its product lines. With its CCM 3100, Bosch Packaging has introduced a modular case packer for the food and candy industries to the U.S. market that fits seamlessly into a fully automated packaging line. Other benefits of the CCM 3100 include its exceptional operating efficiency, its ease of use and flexibility during product changeover.

Bosch Packaging Technology, which is part of Germany's Bosch Group, was originally a well-known developer and producer of band sealers under the Dobby name in the 1940s. The company's products made it possible to package cereal products in cellophane bags to keep them fresh. Today, Bosch Packaging specializes in serving the food and snack industries. Its wide-ranging product portfolio includes machines for horizontal and vertical bagging applications, closing and sealing units, forming and sealing machines for boxes or trays, as well as feeder systems and pick-and-place robots. Typical applications include the packaging of fresh and frozen foods, cereals, snacks, candy, pasta, rice, flour, coffee, pet food, and many more.

#### More flexible forming, filling and sealing operations

As one of the highlights at Pack Expo 2013 in Las Vegas, Bosch Packaging Technology introduced its newly developed CCM 3100 case packer, which fits seamlessly into vertical and horizontal bagging lines. The CCM 3100 accelerates production workflows and improves the flexibility of the packaging process. "With its ability to be combined with other Bosch packaging machines, the CCM 3100 expands our portfolio of flexible and adaptable secondary packaging solutions that can be tailored to the users' needs with regard to bag shapes, ready-to-display arrangements and packaging formats," explains Craig Collett,



Capable of picking and placing up to 180 bags per minute, the Bosch CCM 3100 machine's single frame is attached to an infeed system that accepts products from VFFS and HFFS primary packaging machines

director of HFFS and secondary packaging systems at Bosch Packaging Technology. The CCM 3100 handles a broad spectrum of bag and box sizes and types, including regular-slotted containers, half-slotted containers and other shelf-ready packaging styles.

To be able to pick and place up to 180 bags per minute, the machine's single frame is attached to an infeed system that accepts products from VFFS and HFFS primary packaging machines. Depending on their properties, the products can be handled individually or in groups. They are picked and placed by a dual-axis robot with vacuum nozzles or gripper end effectors. The setup of the CCM 3100 can be quickly changed to accommodate vertical or horizontal bag orientation, a different bag recipe or a different machine configuration. The machine's data storage capacity makes this possible by providing room for over 1,000 recipes as well as a recipe wizard.

The open frame of the CCM 3100 also ensures easy access for quick and tool-less setup changeovers along with high production capacity. A built-in inspection station on the infeed conveyor lets the user control the quality prior to the packaging process and makes sure that all bags are properly shaped and aligned for easy boxing. "Built for ease of use and long life, the CCM 3100 can run 24 hours a day, seven days a week, with operators being able to switch quickly between vertical and horizontal packaging modes in order to optimize the secondary packaging process," says Collett.

#### PC-based control platform as an established standard

Bosch Packaging Technology started employing Beckhoff control devices in 2004. Since then, the company has implemented CX-Series Embedded PCs and EtherCAT I/O technology in several generations of its machines. The CCM 3100, for example, features a robust CX5020 with a 1.6-GHz Intel® Atom™ processor as its central automation and motion control platform and uses EtherCAT to communicate with its servo drives. The CX5020 is connected to a control panel for machine operation, recipe management and troubleshooting. Machine controls and robot programming are handled via TwinCAT automation software. The system can also communicate with older machines via the TwinCAT virtual serial driver software. "For most applications, Bosch Packaging has developed a standard control solution on the basis of the CX5020 Embedded PC and EtherCAT that is being used on many of our machine lines," says Phil Koehler, engineering manager at the company. "Bosch Packaging Technology has standardized on EtherCAT as bus system because of its high speed and broad acceptance in the market, as well as its wiring flexibility and ease of implementation."

Another benefit of the Beckhoff control platform, adds engineering manager Koehler, are its 16-channel high-density (HD) terminals, which reduce the electrical cabinet space requirements for the machine's I/O equipment by up to 75 percent: "The HD terminals contribute to the machine's smaller footprint, which is increasingly becoming a selling point. Using EtherCAT and the CX5020 enables us to offer a control system with exceptional performance and flexibility at a competitive price point."

Joe Franek, engineering supervisor at Bosch Packaging Technology, agrees: "Beckhoff is currently the standard PC control platform for most of our product lines ranging from horizontal and vertical form, fill and seal machines to delta

The CCM 3100 packer uses a CX5020 Embedded PC featuring a 1.6-GHz Intel® Atom™ processor as its central automation and motion control platform.



robotics to box forming and closing.” Phil Koehler summarizes: “By utilizing a PC-based motion control system with EtherCAT we are able to achieve faster scan times and higher axis counts in our motion systems. And we accomplished

all of this while at the same time reducing our control costs when compared to our previous PLC vendor.”

The new CCM 3100 case packer from Bosch Packaging Technology is designed to increase flexibility in secondary packaging, meeting manufacturers’ needs for shorter production runs and more frequent changes in packaging styles.



Further Information:

[www.boschpackaging.com](http://www.boschpackaging.com)

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